

N<sup>o</sup> 13,453



A.D. 1895

*Date of Application, 12th July, 1895*

*Complete Specification Left, 10th Apr., 1896—Accepted, 16th May, 1896*

## PROVISIONAL SPECIFICATION.

### Improvements in Catheters.

We, ALFRED WALSH, of 23 Bartholomew Square, and CHARLES MAW, JOHN THOMPSON, and CHARLES TRENTAM MAW, of the Firm of S. Maw, Son, & Thompson, of 7 to 12 Aldersgate Street, both in the City of London, Surgical Instrument Makers, do hereby declare the nature of this invention to be as follows :—

This invention has for its object improvements in catheters.

Gum elastic catheters as at present made consist essentially of a tube of woven fabric stiffened by the application of a fluid preparation of oil and gum. Heretofore the interior of such catheters has been rough the fabric appearing on the inner surface.

This is objectionable as bacteria are likely to be harboured in the irregularities of the surface and perfect cleansing is very difficult if not impossible.

According to this invention after the catheter has been made in the ordinary way, the fluid gum elastic is poured through it so as to thoroughly coat the inner surface, then after a sufficient time has been allowed for the composition to set, a highly polished metallic wire is passed through and used to smooth the surface and finally when the interior coating is hard it is ground and polished by the aid of a wire burnisher and polishing powder. Thus the inner surface of the catheter is as highly finished as the exterior.

Dated this 11th day of July 1895.

ALFRED WALSH.  
CHARLES MAW.  
J. THOMPSON.  
C. TRENTAM MAW.

## COMPLETE SPECIFICATION.

### Improvements in Catheters.

We, ALFRED WALSH, of 23 Bartholomew Square, and CHARLES MAW, JOHN THOMPSON, and CHARLES TRENTAM MAW, of the Firm of S. Maw, Son, & Thompson, of 7 to 12 Aldersgate Street, both in the City of London, Surgical Instrument Makers, do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement :—

This invention has for its object improvements in catheters.

Gum elastic catheters as at present made consist essentially of a tube of woven fabric stiffened by the application of a fluid preparation of oil and gum. Heretofore the interior of such catheters has been rough the fabric appearing on the inner surface.

This is objectionable as bacteria are likely to be harboured in the irregularities of the surface and perfect cleansing is very difficult if not impossible.

According to this invention we produce a highly polished gum elastic surface in

[Price 8d.]



*Walsh, Maw, Thompson, and Maw's Improvements in Catheters.*

the interior of the catheter so that the foundation tube of woven fabric is entirely enveloped and enclosed within the gum elastic.

We make the improved catheters in the following way :—The woven silk tube which serves as the foundation is stretched upon an iron wire, the wire being inserted into it, then as usual the woven tube is coated with semi-fluid gum elastic. 5

The so called gum elastic is a composition consisting of copal varnish, burnt or highly boiled linseed oil and a small quantity of linseed oil in its natural or unboiled state. When the coating of gum elastic has hardened the wire is withdrawn from the woven tube. Next another coating of gum elastic is applied 10 to the exterior of the woven tube and after this in turn has hardened it is followed by other coatings and so on, coating after coating being applied say daily, until the exterior covering of gum elastic has attained to nearly its full thickness. Each successive coating is hardened by exposure in an oven heated by steam to a temperature of 170 to 180 Fahrenheit or thereabout. 15

All these operations are such as are usual in the manufacture of catheters. At this stage the coating for the interior of the catheter is commenced by pouring the gum elastic through it and allowing it to drain out. An exterior coating of gum elastic may be applied at the same operation. In this way the catheter receives about six internal coatings, each coating being hardened before the next 20 is applied. Finally the smoothing and polishing of the surfaces has to be performed; for the exterior this is done in the usual way on a travelling band with polishing powder consisting of rouge and pumice. The interior is smoothed and polished with the same polishing powder mixed with a little oil, it is applied by means of a wire and the wire is worked about within the catheter by hand 25 continually until no roughness or unevenness is discernable.

In catheters thus made every part of the surface both within and without is of the non-absorbent gum elastic and the woven foundation tube is completely and inaccessibly buried in the gum elastic. The smooth impervious surface of the gum elastic affords no shelter for bacteria and it can be cleaned with facility. 30

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed we declare that what we claim is :—

A gum elastic catheter made substantially as described and having its interior as well as its exterior surface of smooth or polished gum elastic. 35

Dated this 4th day of March 1896.

ALFRED WALSH.  
CHARLES MAW.  
J. THOMPSON.  
C. TRENTAM MAW. 40





